Impacts of an Accelerated Filling Schedule

In the event that project implementation allows for a faster filling schedule (i.e., one or two years for filling rather than the three years of filling modeled) the following discussion estimates the likely impact of such a schedule change. This accelerated schedule was not modeled, but the impacts of using an accelerated schedule can be estimated from the modeling for the original schedule. The likely impacts are:

1. An accelerated schedule would reduce the time available for consolidation of the dredged material after placement in the CAD cell and prior to capping. Examination of the rate of consolidation indicates that consolidation prior to capping could be reduced from about 10.3 ft to about 5 or 6 ft. This would mean that a larger CAD cell would be needed to contain the dredged material, approximately a 700-ft square instead of a 650-ft square. This issue could potentially be addressed by delaying the placement of the cap.
2. Since the dredged material will occupy a greater volume prior to capping, it will displace more CAD cell water that will be contaminated by resuspension. The quality of the CAD cell water is not likely to change from the quality predicted for the original schedule because it is predicted to be in equilibrium with the dredged material. Therefore, the increase in placement losses is likely to be in proportion to the change CAD cell volume or about 20%, increasing the placement losses during disposal from 2.5 kg PCB to 3.0 kg PCB and from 44 kg Cu to 53 kg Cu.
3. Accelerating the placement schedule will increase the number of loads or the size of the loads. Preferably, the size of the loads will be increased to minimize traffic and improve efficiency. Increasing the number of loads would permit less time for settling and increase the surface water displacement and disturbance by barges and tugs, resulting in an additional loss of suspended sediment and associated contaminants. Increasing the size of the load would have a less detrimental effect on settling and loss of suspended sediment. Larger loads are released deeper in the water column, have less entrainment of water during its descent to the bottom of the CAD cell, and maintain a greater density difference to provide stability on the bottom.
4. Contaminant losses after placement will be greatly reduced because very little CAD cell water would remain after the first year of filling, as little as 3 to 10 ft depending on whether additional filling is done in the second year. In the original schedule, a total of about 28 ft of CAD cell water was predicted to be lost over the three years of placement, yielding a reduction in post-placement losses of about 65 to 90%. This would reduce after-placement losses from about 2.5 kg PCB to 0.3 to 0.9 kg PCB and from about 14 kg Cu to 1.4 to 5 kg Cu.
5. Accelerating the placement schedule is estimated to result in a net decrease in PCB loss of 1.5 to 2 kg and net decrease in Cu loss of 1 to 4 kg. However,

Deleted: Due to the potential availability of greater funding for the project, an accelerated filling schedule is being considered, reducing the filling and capping period to as little as two years – one for filling and the other for capping or both filling and capping.

Comment [DD1]: Is this statement correct, or is the consolidation required just to "fit" the dredged material into the CAD?

Comment [PRS2]: Consolidation is required to fit the dredged material in the CAD cell during placement operations. We are putting 52 ft of material in a 47 ft deep cell. Therefore, we need 5 ft of consolidation just to hold the dredged material. In addition, we need additional volume to hold theentrained material and permit settling (2 to 3 ft). In addition, we need sufficient draft to permit the barge to move over the site and release its load. For a 1000 cy barge, this would be about 10 ft or about three ft below the existing bed at the CAD site. Therefore, a larger area will be required.

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this savings may not be realized if adequate settling is not maintained due to a loss of quiescent settling time by more frequent disposal events.

6. A reduction in consolidation prior to capping will increase the quantity of consolidation after capping and increase pore water expulsion through the cap. However, the additional mass of contaminants in the pore water expulsion is very small and is not estimated to meaningfully impact the long-term contaminant loss after capping or contaminant breakthrough.

Comment [DD3]: There would not be more consolidation in total from an acclerated schedule compared to the modeled schedule, correct?

Comment [PRS4]: There would be less overall consolidation if we build a larger CAD cell. However, the quantity of consolidation that will occur after capping will be greater and the ultimate elevation of the top of the cap after consolidation is completed will be lower. This will permit greater natural burial of the cap.

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